ORIGINAL

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December 9, 1999

VIA HAND DELIVERY

Magalie Roman Salas, Secretary
Federal Communications Commission
The Portals, 12th Street Lobby
445 12th St., SW, Counter TW-A325
Washington, DC 20554

RECEIVED
DEC 9 1999
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Re: Ex Parte Presentation
IB Docket No. 99-81
ET Docket No. 95-18
RM-9328

Dear Ms. Salas:

Pursuant to Section 1.1206 of the Commission's rules, I hereby submit an original plus six copies of this letter to notify you of the following meetings that were held yesterday at the Commission on behalf of Celsat America, Inc. ("Celsat"): First, David Otten of Celsat, Mark Grannis of Harris, Wiltshire and Grannis and I of this firm met with Bryant Tramont, legal advisor to Commissioner Furtchgott-Roth. Second, Mr. Otten, Mr. Grannis and Toni Cook Bush of this firm met with Ari Fitzgerald, legal advisor to Chairman William Kennard. Finally, Mr. Otten, Mr. Grannis and I met with Marc Schneider, legal advisor to Commissioner Ness. At each of these meetings, Mr. Otten described the Celsat system and distributed certain materials to each of the legal advisors (copies of which are attached hereto). In addition, Celsat urged the Commission to act expeditiously on Celsat's application to provide MSS at 2 GHz.

Please direct any questions concerning this matter to the undersigned.

Very truly yours,

Brian Weimer

Enclosures

cc: Ari Fitzgerald
Marc Schneider
Bryan Tramont

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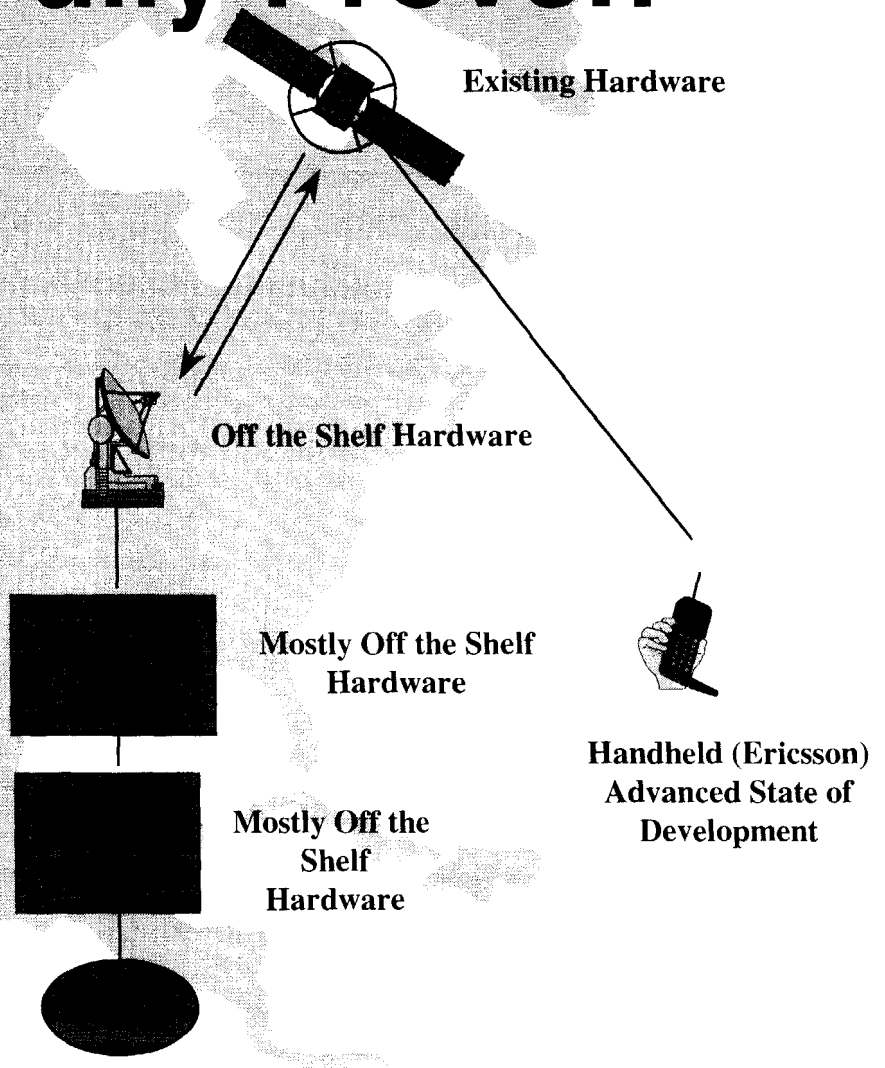
ORIGINAL

SUMMARY OF CELSAT'S ADVANTAGES

- **Best Service**
  - **High Voice Quality**
  - **Enhanced Services**
  - **Full North American Coverage**
- **Lowest Cost**
  - **Pennies a Minute**
  - **LOI for Sale of Seven Billion Minutes**
  - **1 Satellite to Initiate Commercial Service**
- **Proven, Innovative Technology**
  - **High Gain 20 Meter Antenna**
  - **Multiple Beams**
  - **9 U.S. Patents Issued**

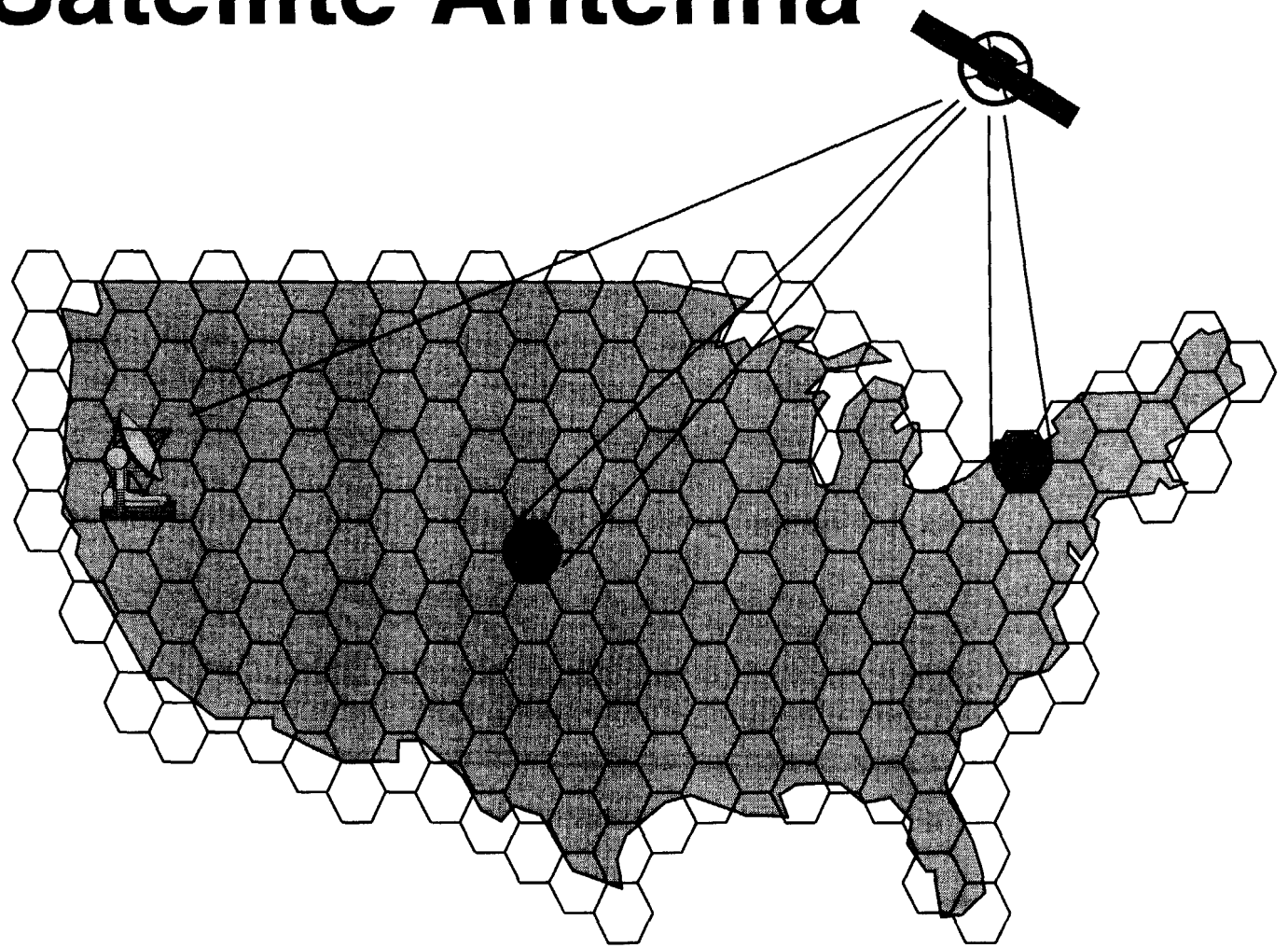
Technology Fully Proven

- **Satellite Bus, Payload and 21m S-Band Multi-Beam Antenna Are Proven In-Use Designs.**
- **Ground Gateway Network & Base Station Utilize Mostly Existing Feeder Station and Cellular/PCS Hardware.**
- **Dual Mode Terminal - Advanced State of Development**



High Gain, Multi-Beam Satellite Antenna

- 120 Transponders Per Satellite.
- 20 Meter Satellite Antenna Diameter.
- $^1/_2$ Degree 3dB Beamwidth, ~50dB Gain.
- 100 Miles Cell Radius on Earth.
- Beams Always at Least 36 Degrees Above Horizon for the US, except Alaska.



Speed of Light Transmission Effect

- **No Impact on:**
  - **Internet Usage**
  - **Fax**
  - **Paging**
  - **Data**
- **Echo Cancellers Minimize any Problems for Voice**

Other Regional GEOs

- **Potential Regional GEO systems include:**
  - **ACeS (coverage of Indonesia and South East Asia)**
  - **Thuraya (coverage of Moslem countries, India, Europe**
- **All of the above utilize 12 meter reflectors**
  - **Celsat has more than twice the capacity for the same cost**
- **Financial and Technical Support From Major Satellite Manufacturers**

"Cheaper , Better, Faster " Than Iridium, Globalstar, and ICO

- High Speed Internet -- Up to 2 Megabits Per Second
- Smaller, Lower Power PCS Size Handset
- Higher Signal Margin
- Celsat Will Serve a Proven and Rapidly Growing Market
- Service -- Pennies a Minute, Not Dollars a Minute
- Start With 1, Not 66, 48, or 12 Satellites
  - Faster, Simpler and Cheaper by Far
  - Respects "Otten's Law"

Celsat Is The Most Competitive

	Price Per Minute	Handset Price	Maximum Data Rate	Dual Mode Phone	Average RF Power	Satellite Handovers Required	Microwave Oven or Bluetooth Wipe Out?
Iridium	$3.00 to $7.00 retail	$1,000 +	2.4 Kbps	Brick With Hot Dog Antenna	0.5 Watt	Many	No
ICO	$2.00 retail	$700	64 Kbps	Brick With Hot Dog Antenna	0.5 Watt	Some	No
Globalstar	$1.50 retail	$1,000	9.6 Kbps	Brick With Hot Dog Antenna	0.5 Watt	Many	Yes
Celsat	$0.08 wholesale	Free	Fixed: 2 Mbps Mobile: 384 Kbps	Small, User Friendly PCS Phone	0.25 Watt	None	No

Source: FCC and SEC documents, press coverage, and Celsat Estimates

System Fundamentals

Company	Satellites Needed Initially	Initial System Cost	Coverage	Maximum U.S. Circuits	Signal Margin	Relative cost per voice call
Iridium	66 Plus Spares	$5.0 Billion to $8 Billion	World Wide	4,000	16db Maximum	200
ICO	12	$4.6 Billion	World Wide	4,000	8 - 10db	30/10
Globalstar	48 Plus Spares	$3.3 Billion Plus Ground Stations	World Wide	4,000	8db Maximum	125
Celsat	1 Plus Spare	$0.75 Billion	U.S., Canada, and Mexico	50,000 Per Satellite	16 - 22db	1

Source: FCC and SEC documents and Celsat Estimates

Low Cost Bluetooth Enhanced Internet Access

- Outbound Link For Dish or Direct TV Internet Subscribers
  - 2 MBPS
  - Competitive With Cable
- Remote Mobile PCS Internet Access
  - 384 Kbps Inbound and 96 Kbps Outbound
  - Greatly Expanded Coverage, Including Aircraft
- Personal Digital Assistant Internet Access
  - Coverage Everywhere, Including In Buildings
- 2 MBPS Home Installation

The GSM Alliance Companies Will Be Part of Celsat's Customer Base

COMPANY	NUMBER OF POPS	LICENSED AREA
VoiceStream	220 million	Near Nationwide (More POPs Than ATT or Sprint)
Pacific Bell Mobile Services	31 million	Southwest
Microcell Telecommunications, Inc.	25 million	Canada
Powertel, Inc.	24 million	Southeast
BellSouth Mobility DCS	13 million	Southeast

CELSAT
Complementary to PCS

- **PCS Covers About 10% of the U.S. Geography**
  - **All Digital**
  - **Excellent Voice Quality**
  - **Full Features**
- **Cellular Covers Over 70% of U.S. Geography**
  - **Typically Analog**

Celsat Advantages

- **Low Prices**
  - **8 Cents per Minute Anywhere in the U.S.**
  - **1 Cent per Minute Breakeven**
- **Rapid Time to Service**
  - **Commercial Service With One Satellite**
- **Voice + Data Capability**
  - **High Speed Mobile Internet Access**
- **Dual Mode Satellite/Terrestrial Handhelds**
  - **Same Size as PCS Phones**
- **Low Cost System**
  - **Breakeven with 250,000 Subscribers**

Celsat America, Inc. History

- 1991 - 1993
  - Developed Technical and Business Concepts
  - First U.S. Patent Granted
- 1994 - 1996
  - Additional U.S. Patents Granted
  - Investment by Cellular Communications, Inc.
  - Hughes, Ericsson, Nortel, and Cellular Communications, Inc. Support
- 1997 - Present
  - Investments by Echostar DBS Corp., George Schmitt, and Bill Ginsberg
  - Sale of Seven Billion Minutes of Air Time to GSM Alliance (LOI)
  - FCC License Expected
  - Additional U.S. and Foreign Patents Granted
  - Continued Support From Ericsson
  - Investment Bankers: DLJ and B of A Securities

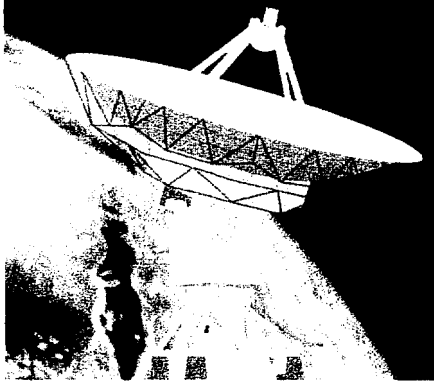
CELSAT
"Cheaper, Better, Faster"
Mobile Satellite Communications

BRIEFING

December, 1999

David D. Otten
Chairman and CEO
Celsat America, Inc.

Satellite Offers a Constellation of Services



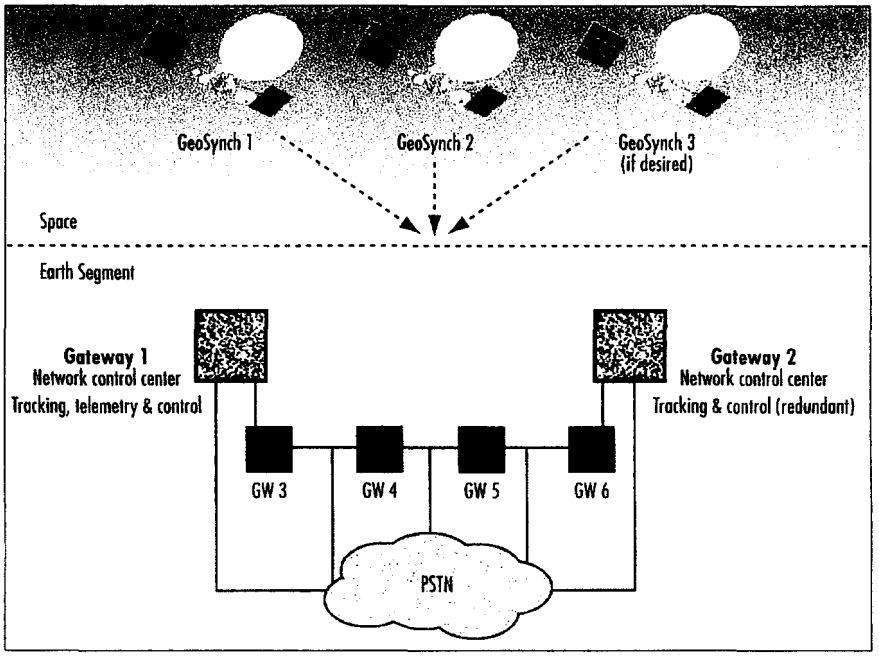
By David D. Otten

During the last two decades, there has been a massive build-out of ground-based mobile telephone systems worldwide. The resulting service has established customer expectations regarding cost and features, as well as the size of the mobile handheld.

Even though mobile satellite systems can provide coverage of areas not presently covered by ground-based systems, any system that deviates radically from ground-system norms will have limited customer acceptance.

Following is information on ground-based systems that highlight the competitive background mobile satellites will encounter.

Figure 1: Celsat Full Network Architecture (simplified)



Ground-Based Mobile Telephony

According to *Forbes ASAP*, last year, wireless customers rose 56 percent worldwide.[1] The mobile telephone industry started its rapid growth in the early 1980s with construction of analog cellular systems. A system consisted of radio transceivers placed on towers in strategic locations, each tower providing radio coverage of a particular area or cell. The FCC issued only two licenses in each region of the country. Cellular coverage is extensive, although incomplete, in most cities, but is lacking in many rural areas.

Although the size and price of the subscriber phones declined dramatically during the last decade, the price of cellular service remained high, due to

Celsat's dual-mode PCS/satellite phone is the same size and power as a single-mode PCS phone.

the lack of competition. The FCC made spectrum available for new market entrants to address this problem. These frequencies became known as personal communications services (PCS) bands.[2]

PCS licenses were auctioned by the FCC in the mid-90s. Entities that purchased new licenses included AT&T, Sprint, PrimeCo PCS and members of the North American GSM Alliance.[3] The most recent PCS networks are digital and provide improved voice quality, higher network capacity and a range of new services. Despite cellular's early advantage of entrenched distribution, PCS providers have quickly established more retail points and begun to secure shelf space under previously exclusive agreements. This year, the percentage of net adds for PCS is expected to surpass cellular for the first time.

Wireless data, which accounts for less than 1 percent of revenues today, represents significant potential for enhancing revenue of PCS companies as the following preconditions are resolved:

- higher speed capability
- robust network coverage, capacity and quality
- easy-to-use subscriber equipment
- development of software needed for applications.

PCS networks operate at higher frequencies than their cellular counterparts. Consequently, each PCS tower covers a much smaller area than that covered by a cellular tower, rendering PCS coverage outside metropolitan areas substantially more expensive. Furthermore, FCC coverage requirements for PCS are far less stringent than for cellular. The result is that PCS coverage is only about 10 percent of the area of the United States. PCS subscribers can roam on cellular networks but call quality is often inferior to that of PCS, and cellular lacks many PCS features. In a one-rate environment, current cellular roaming rates for PCS will probably become unsustainable unless, like AT&T, the PCS provider also owns extensive cellular networks.

Satellite-Based Mobile Telephony

The telecommunications industry is driven by the need to communicate—to make contact with one another in whatever form. The vehicle for such contact is often market-driven. Economics will drive the engine, and the economics of a mobile communications satellite system are fundamentally dependent on the choice of orbits—geostationary-earth-orbit (GEO), low-earth-orbit (LEO) or intermediate-circular-orbit (ICO).

GEO refers to a satellite's position relative to Earth. GEO satellites are placed in 24-hour circular equatorial orbits and appear to hover in a constant position over Earth's surface. A single satellite can provide service to up to one-third of Earth's landmass. The lifetime of a GEO satellite is 17 years. The cost of a typical regional GEO mobile satellite system is under $1 billion. Prior to the launch of Iridium's LEO system, commercial communications satellites serving fixed or mobile users were GEOs because they were cost-effective. ACeS, AMSC, Celsat, Thuraya and TMI are mobile satellite companies that are using or plan to use GEO systems.

GEO signals travel from Earth to a satellite and back to Earth at the speed of light (0.25 seconds). Typically termed latency, this delay is not an issue for Internet, fax and other forms of data transmission. Assuming proper protocols are used, a system works effectively regardless of the delay.

Celsat's Technical Concept

Celsat is a satellite-based mobile telephone system designed to augment existing wireless systems and provide low-cost wireless Internet access capabilities. Services to a subscriber unit are provided by a large (20-meter diameter dish) S-band antenna on the satellite.

Satellite links to gateways will be via Ka-band antennas—one for receive and one for transmit—each having six feeds, one for each of the six Celsat ground gateways. The up-converters and down-converters to and from the S- and Ka-bands will be based on existing designs and parts.

The S-band and Ka-band electronics will be mounted on, and supported from, the bus that provides electric power and propulsion. The ground segment will primarily use existing standard equipment. The PCS handsets will be dual-band (satellite and PCS) units furnished free to the user.

Other aspects of the system:

- The North American system will be composed of a space segment with three GEO satellites and a ground segment with six gateway earth stations.
- The ground segment includes redundant national network control centers co-located with two initial gateways, along with a satellite tracking, telemetry and command (TT&C) center.
- The initial system has one satellite and two gateways. A spare satellite will be added within a year.
- The satellites operate in the 2 GHz mobile satellite services (MSS) band (in the S-band) with a nominal radiated power of 2 kilowatts, using a 20-meter parabolic reflector with multiple feeds.
- The first satellite provides greater than 16-decibel fade margins and approximately 50,000 voice circuits (simultaneous voice conversations) for handheld phones.
- Celsat will support a variety of digital terrestrial systems using CDMA (IS-95 and PN-3384), TDMA (IS54 and IS-136), GSM (PCS-1900) or 3G.
- The user segment will be an updated version of the ACeS terminal developed by Ericsson.

During the first three decades of operation (1960-1990), voice transmission over GEO typically suffered not only from delay, but also from echo, once the signal entered the telephone network. The combination of echo and delay—especially if the delay was substantially greater than 0.25 seconds—was disturbing to users. Low-cost fiber eventually replaced satellites for long-distance voice communications in the United States, although satellites remain in use for voice communications in other regions of the world.

Low-cost echo cancellers were developed in the early 1990s. With echo eliminated, extensive testing has proven most users do not notice any voice quality degradation due to the split-second GEO delay. Furthermore, mobile users are much more forgiving of quality degradation than fixed users. The cost and convenience of a low-cost GEO service is likely to be a determinant for subscribers that find the delay noticeable. In some rural areas there is no alternative, and when mobile satellite users are in cities, they will typically be serviced by ground-based PCS that has no discernible delay.

LEO satellites orbit much closer to Earth than GEO satellites, and can usually be designed with a small latency, although this was not the case with Iridium. A large number of LEO satellites are required to provide continuous coverage over any area of Earth. Iridium, for example, requires 66 satellites to provide service. That service is reasonably uniform over the globe. The lifetime of a LEO satellite is five to seven years, a shorter span than a GEO's. LEOs spend up to 80 percent of their useful life over water and land areas with little revenue potential because of low population. Further, the capacity of LEOs over a geographic region such as the United States is only a fraction of the capacity of a GEO satellite. Iridium, Globalstar, Constellation and Ellipso, conceived in the late 1980s, are LEO systems.

The cost to implement the Iridium system was approximately $5 billion.

"The economics of a mobile communications satellite system are fundamentally dependent on the choice of orbits."

Iridium's operations and maintenance costs are said to be about $500 million per year. Thus, maintenance costs alone for two years are more than the entire cost of establishing a 17-year-life GEO system, not to mention the original implementation cost.

ICO systems are alternatively referred to as medium-earth-orbit (MEO) systems, and operate in orbits between GEO and LEO. ICO satellites have a lifetime greater than LEOs and less than GEOs. ICO Global

Communications Ltd. was developing a $5-billion, 12-satellite system for early next year.

Iridium, Globalstar and ICO have multibillion-dollar mobile satellite systems intended to serve a new market of global customers without cellular coverage that can afford the high price tag. Iridium and ICO declared bankruptcy.[4] To some, Globalstar awaits the same fate. "The point being, I don't see a market for Globalstar," said Tim O'Neil, analyst at SoundView Financial Group. "The places that need it can't pay for it."[5]

Celsat's System

Celsat America Inc. was conceived to augment PCS services. The company will offer a small, free, dual-mode PCS/satellite phone similar in size and power to a single-mode PCS phone, and will provide the service at a cost competitive with PCS (8 cents per minute for a phone call, including long distance). Celsat will address a large, general U.S. subscriber base. In cities, a subscriber will use a PCS network. Where there is no PCS coverage, a subscriber can be serviced by Celsat, and the handset can be used within cars and buildings. Partners include the North American GSM Alliance, and projected service start date is late 2002.

The system's data transmission includes three significant features: ubiquitous coverage, high speed and low cost. Celsat has identified four specific market niches: Internet and other data services for basic mobile voice PCS customers via portable PCs at data rates of 394 kilobits per second (kbps) inbound and 96 kbps outbound; services specifically targeted at the personal digital assistant (PDA) and PDA/cell phone market; a 2 megabits per second (Mbps) return link for direct broadcast TV companies offering Internet and other two-way data services; and nonmobile, high-speed Internet and other data services to fixed-based subscribers who want speeds up to 2 Mbps. (See sidebar on Page 32 and Figure 1 for more detail.)

The telecommunications industry is driven by the need to communicate, and technology is changing at breakneck speed. The role of satellite services in the mobile wireless future will be powerful, if the price is right and the handheld is competitive with cellular and PCS handhelds in size, features and cost. ***RRM***

David D. Otten is chairman and CEO of Celsat America Inc. He can be contacted by phone at (310) 316-1339.

Footnotes

1 *Forbes ASAP*. Aug. 23, 1999, page 134.

2 These new digital mobile services operate in the 1900 MHz band. First-generation mobile services are analog cellular operating at 800 MHz; second-generation are digital cellular operating at 800 MHz. Three different and incompatible PCS standards are in use in the United States—code division multiple access (CDMA) used by Sprint; time division multiple access (TDMA) used by AT&T; and global system for mobile communications (GSM). GSM is the leading worldwide digital standard used by the members of the North American GSM Alliance.

3 The GSM Alliance seems to be entering a consolidation phase, as VoiceStream acquired Omnipoint and Aerial.

4 Iridium declared bankruptcy Aug. 15, 1999. ICO declared bankruptcy Aug. 27, 1999.

5 *RCR*. Sept. 6, 1999, page 45.